

From: [REDACTED]
To: [Wylfa Newydd](#)
Subject: Wylfa Newydd DCO Examination - PAWB Evidence for Deadline 10
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Wylfa Newydd DCO Examination

PAWB Evidence for Deadline 10 (April 10th 2019)

Response to Horizon's March 2019 document 'Wylfa Newydd Project - Statement of Reasons'

In Section 5 of Horizon's 'Wylfa Newydd Project - Statement of Reasons' (EN010007-003354-21) Revision 3.0, dated 25th March 2019, it is accepted by Horizon in paragraph 5.1.1, page 14, that the Wylfa Newydd scheme would be commissioned after 2025.

PAWB contests Horizon's claim in 5.1.3 which states '*if anything, the need for new nuclear power is now even greater than before*'.

PAWB claims that the need for (secure, affordable) **low-carbon renewable power** is now even greater than before BECAUSE ALL of the 16 GW programme of new-build nuclear schemes planned for deployment between Xmas 2017 and end of 2025 will have failed to deploy by 2025 if ever.

These nuclear schemes formed a significant part of the low-carbon electricity sector and UK climate strategy in the years from 2011 and were partly justified on the grounds that renewable energy and CCS / BECCS schemes could not be built at sufficient scale in the time period to 2025.

In 2015 HMG even reduced the funding and planning policy support for onshore wind and PV schemes - while Centrica increased its gas supply contracts with Gazprom, so increasing high-carbon Natural Gas use in the UK (see Note 1). Much of this Natural Gas will now be being used in UK CCGTs (gas-fired power stations) to provide the electricity which HMG expected would be supplied by Hinkley Point C from Xmas 2017.

So Natural Gas imports from Russia for electricity generation have increased while renewable energy deployments have been pegged back since 2016. Yet, firstly, avoiding or reducing Natural Gas energy dependency on Russia was one of the cited reasons for successive governments since 2006 to make 'energy security' one of three pillarised rationale (supporting IROPI and Regulatory Justification : <http://www.hse.gov.uk/radiation/ionising/legalbase.htm>) for the planned nuclear power programme of which the Wylfa Newydd scheme was part.

Secondly, low-carbon electricity strategies and schemes which could have been generated by renewables to 2025 were not planned-in from 2011 to the extent that they could have been because of the expectation that new nuclear power stations would be deployed between 2017-2025. Then in 2016 renewable deployments were further pegged back and Natural Gas imports increased.

While this is a 'significant' (see Note 2) policy failure by Government, for Horizon to now claim that the failure to deploy new-build nuclear by 2025 means that there is a greater need for new-build nuclear post 2025 is a risky self-fulfilling policy loop which goes against the increasing evidence.

If the planned post 2025 NPS nuclear programme fails to materialise by 2030 that argument would conclude that there would be an even greater need for new-build nuclear again, further displacing alternative means (renewables and CCS/BECCS) of achieving the low-carbon electricity policy and climate targets (commitments and UK Law).

For Horizon to claim there is now a greater need for a Wylfa Newydd while suspending the scheme and making most of its staff redundant during the DCO examination is a further undermining of its own argument, and a clear further risk to UK energy and climate policy.

The Wylfa Newydd scheme was suspended as a result of Secretary of State for Energy Gerg Clark concluding it would not be value for money considering the falling cost of renewables. 'Affordability' was one of the three pillars for the 2011 new-build nuclear policies (EN1 and EN6). Refining the Horizon argument further would be to conclude that because the Wylfa Newydd scheme has been suspended there is now a greater need for a Wylfa Newydd scheme. Such arguments should be dismissed.

It can be evidentially claimed that deploying renewable energy technologies (and possibly some CCS/BECCS schemes) were, and now certainly are, more likely to achieve HMG's low-carbon electricity and climate policy aims to 2025. Now in 2019 offshore wind, PV and on-shore wind technologies are all maturing and all capable of large-scale or very large-scale deployment.

Considering these renewables' declining costs, even including their additional 'system costs' (balancing and back-up), are highly-competitive if not unbeatably low, there is considerable weight of evidence and reason to conclude that : **the need for new nuclear power is now even less than before, it was not even needed before, it was distraction before and it should not become a distraction again.**

Horizon and the Secretary of State for Energy should reflect on the weight they now give to policies EN1 and EN6 with respect to the Wylfa Newydd DCO not least in the light of the evidence presented above.

Neil Crumpton PAWB (representative for PAWB as deputy co-Chair of the BEIS-NGO nuclear Forum), April 10th 2019

Notes

1) In 2015 Secretary of State for Energy Amber Rudd introduced policies to significantly reduce renewables deployment, particularly onshore wind and PV. That same year Centrica signed up for increased gas imports from Putin's Russia by 2.3 billion cubic meters (BCM) per year, doubling UK imports from the Russian energy :

<https://www.offshoreenergytoday.com/centrica-increases-gas-supply-volumes-with-statoil-and-gazprom/>

2.3 BCM per year is about 24 TWh per year thermal gas energy - which can generate about 12 TWh of electricity per year (about half the annual output of a 3GW nuclear power station). 12 TWh/y of electricity could also be generated by renewables eg a 6 GW solar PV deployment (5.5 TWh/y) plus a 2.6 GW deployment of onshore windfarms (6.5 TWh/y).

So, it is clear that HMG would rather import gas from a nation implicated in proxy wars

and the shooting down of civilian airliner than build PV and onshore windfarms which the majority of the British public continue to support in probably every poll ever carried out. Avoiding dependence on Natural Gas from Russia, **on energy security grounds**, was a primary rationale for new-build nuclear during the energy reviews between 2005-2007 in the first place.

Furthermore, offshore wind deployment could also be accelerated from 2019 (operating by 2025) if auction rounds are sufficiently funded by Government, as it is now clear that offshore wind costs are highly cost competitive and still falling due to the increasing size of the turbines. For example, a Wylfa output of 23 TWh/y electricity could be generated by just 500-600 offshore wind turbines each of capacity 10-12 MW (ie 6 GW x 8.76 x 44 % annual capacity factor - 23 TWh/y). GE claim their latest 12 MW turbine, deployable from 2024, would achieve 63 % annual capacity factor :

<https://www.ge.com/renewableenergy/wind-energy/offshore-wind/haliade-x-offshore-turbine> which if achieved would deliver 23 TWh/y from as few as 350 offshore turbines.

2) The 16 GW (five project) new-build nuclear programme was planned to be generating about 125 TWh per year of electricity by end of 2025, starting from Xmas 2017. So assuming a linear output increase over that 8 year period then the cumulative electricity expected to be generated amounted to 500 TWhs (125 x 8 / 2). All this low-carbon output will now have to be generated by gas-fired power stations (or worse coal) which emit roughly 0.4 million tonnes of CO2 per TWh generated at baseload.

So UK CO2 emissions NOT avoided by the nuclear power policy programme failure to 2025 is about **200 million tonnes**. For comparison, annual UK CO2 emissions were 367 million tonnes in 2017 (see link below). Over 8 years UK CO2 emissions would be roughly 2,900 mt (367 x 8) so 200 mt is about 7 % of that emission period total for the whole nation. Such a policy failure could be described as 'significant'.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/695930/2017_Provisional_Emissions_statistics_2.pdf

Note also that the Drax power station (which has three units totalling about 1.8 GW fired by biomass) could have been fitted with CCS and pipeline to North Sea potentially by 2025 (National Grid consulted on the pipeline route in 2014 for the adjacent 0.3 GW White Rose demonstration CCS coal scheme*. The 60 cm diameter pipeline would have a capacity to transport upto 18 mtCO2 per year.

The Drax company are currently considering a BECCS pilot scheme if government funding facilitates such 'carbon-negative' electricity generation. Drax is converting a fourth 645 MW unit to biomass-firing**. A full BECCS scheme on 2+GW of biomass units by 2020 will be able to generate about 10 TWh per year electricity from biomass emitting about 8 mt CO2 per year of which about 80+ % (6.5 mt CO2 per year) could be captured and geologically stored. Over, for example, a five year period from 2021-2025 such a BECCS scheme could have sequestered around **30 mtCO2** (5 x 6.5 mt).

As stated above, the entire 16 GW nuclear programme would have avoided about 200 mtCO2 over 8 years. As the 16 GW nuclear has 'slipped' by about 8 years (eg deploying now at soonest from 2026 to say 2032) a BECCS scheme just on Drax could sequester by 2032 around **80 mtCO2** (6.5 mt x 12) ie compared to 200 mtCO2 in the now 'best case' new-build nuclear programme assuming deployment by end of 2032.

* <https://infrastructure.planninginspectorate.gov.uk/wp->

<content/ipc/uploads/projects/EN010048/EN010048-000472->

<5.1.2%20Consultation%20Report%20Appendices%207.8%20-%207.17.pdf>

** <https://www.drax.com/investors/drax-group-plc-half-year-results-for-the-six-months-ended-30-june-2018/>

So BECCS technology which could have been deployed by 2020, and still could by 2025, on one biomass power plant could also have contributed considerably to the Government's planned annual carbon reduction targets to 2025 and certainly could to 2030 and beyond.
